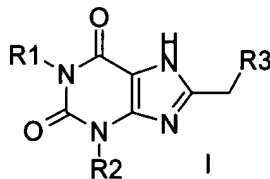


## Claims

1. A compound of formula



wherein

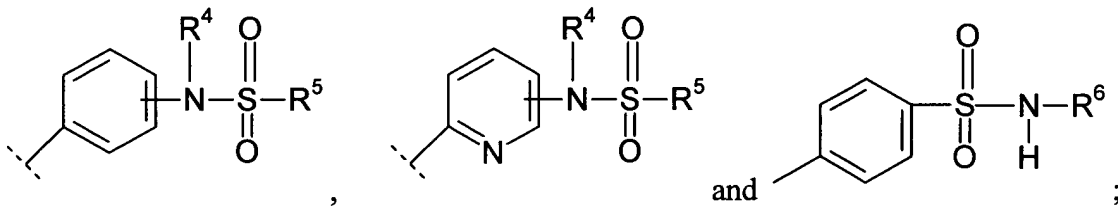
R<sup>1</sup> is selected from the group consisting of

- lower alkyl,
- lower alkyl substituted by phenyl and
- lower alkyl substituted by halogen substituted phenyl;

R<sup>2</sup> is selected from the group consisting of

- lower alkyl and
- lower alkyl substituted by lower cycloalkyl;

R<sup>3</sup> is selected from the group consisting of

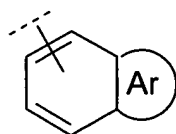


R<sup>4</sup> is selected from the group consisting of H and lower alkyl;

R<sup>5</sup> is selected from the group consisting of

- lower alkyl,
- amino lower alkyl,
- lower alkyl substituted by phenyl,
- lower alkenyl substituted by phenyl,
- phenyl,
- phenyl substituted by at least one substituent selected from the group consisting of
  - lower alkyl, lower alkyl substituted by halogen, halogen, lower alkoxy,
  - lower alkoxy substituted by halogen, nitro and acetamido,

- a 5-membered heteroaromatic ring having one heteroatom independently selected from the group consisting of N, O and S, the 5-membered heteroaromatic ring being unsubstituted or substituted by at least one substituent selected from the group consisting of lower alkyl, halogen, carboxy lower alkyl, amino, alkyl amino and acetamido,
- a 5-membered heteroaromatic ring having two heteroatoms wherein a first heteroatom is N and a second heteroatom is independently selected from the group consisting of N, O and S, the 5-membered heteroaromatic ring being unsubstituted or substituted by at least one substituent selected from the group consisting of lower alkyl, halogen, carboxy lower alkyl, amino, alkyl amino and acetamido,
- a 6-membered heteroaromatic ring having one N, the 6-membered heteroaromatic ring being unsubstituted or substituted by at least one substituent selected from the group consisting of lower alkyl, halogen, carboxy lower alkyl, amino, alkyl amino and acetamido,



wherein Ar is selected from the group consisting of

- a 5-membered heteroaromatic ring fused to the 6-membered ring, having one, two, or three heteroatoms, and wherein a first heteroatom is N, a second heteroatom is N and a third heteroatom is selected from the group consisting of O and S,
- a 6-membered aromatic ring fused to the 6-membered ring, having no or one N heteroatoms, the fused 6-membered aromatic ring being unsubstituted or substituted by at least one substituent selected from the group consisting of lower alkyl, halogen, carboxy lower alkyl, amino, alkyl amino and acetamido; and

R<sup>6</sup> is selected from the group consisting of H,

- a 5-membered aromatic heterocyclic ring with one or two heteroatoms wherein a first heteroatom is N and a second heteroatom is selected from the group consisting of N and S, the 5-membered heterocyclic ring being

unsubstituted or substituted by at least one substituent selected from the group consisting of lower alkyl, halogen, carboxy lower alkyl, amino, alkyl amino and acetamido, and

a 6-membered aromatic heterocyclic ring with one or two N heteroatoms, the 6-membered heterocyclic ring being unsubstituted or substituted by at least one substituent selected from the group consisting of lower alkyl, halogen, carboxy lower alkyl, amino, alkyl amino and acetamido, or a pharmaceutically acceptable salt or prodrug thereof.

2. The compound of formula I according to claim 1 wherein R<sup>1</sup> is lower alkyl.

3. The compound of formula I according to claim 2 wherein R<sup>2</sup> is lower alkyl.

4. The compound of formula I according to claim 3 selected from the group consisting of  
1,3-dimethyl-1*H*-pyrazole-4-sulfonic acid [4-(1,3-dimethyl-2,6-dioxo-2,3,6,7-tetrahydro-1*H*-purin-8-ylmethyl)-phenyl]-amide; and  
5-chloro-1,3-dimethyl-1*H*-pyrazole-4-sulfonic acid {4-[1,3-dimethyl-2,6-dioxo-2,3,6,7-tetrahydro-1*H*-purin-8-ylmethyl]-phenyl}-amide.

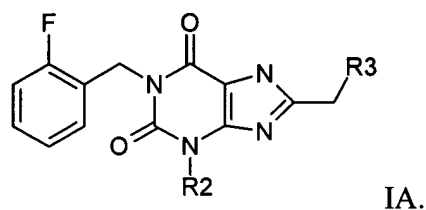
5. The compound of formula I according to claim 1 wherein R<sup>1</sup> is lower alkyl substituted by phenyl.

6. The compound of formula I according to claim 5 wherein R<sup>2</sup> is lower alkyl.

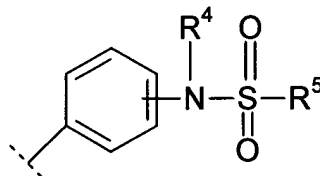
7. The compound of formula I according to claim 6 wherein the compound is selected from the group consisting of

4-(1-benzyl-3-butyl-2,6-dioxo-2,3,6,7-tetrahydro-1*H*-purin-8-ylmethyl)-benzenesulfonamide;  
*N*-[4-(1-benzyl-3-butyl-2,6-dioxo-2,3,6,7-tetrahydro-1*H*-purin-8-ylmethyl)-phenyl]-4-methyl-benzenesulfonamide and  
*N*-[4-(1-benzyl-3-butyl-2,6-dioxo-2,3,6,7-tetrahydro-1*H*-purin-8-ylmethyl)-phenyl]-methanesulfonamide.

8. The compound of formula I according to claim 1 having the formula



9. The compound of formula IA according to claim 8 wherein  $R^2$  is lower alkyl.
10. The compound of formula IA according to claim 9 wherein  $R^2$  is *n*-butyl.
11. The compound of formula IA according to claim 10 wherein  $R^3$  is



12. The compound of formula IA according to claim 11 wherein  $R^4$  is H.
13. The compound of formula IA according to claim 12 wherein  $R^5$  is a 5-membered heteroaromatic ring having one heteroatom independently selected from the group consisting of N, O and S, the 5-membered heteroaromatic ring being unsubstituted or substituted by at least one substituent selected from the group consisting of lower alkyl, halogen, carboxy lower alkyl, amino, alkyl amino and acetamido.

14. The compound of formula IA according to claim 13 selected from the group consisting of  
thiophene-2-sulfonic acid {4-[3-butyl-1-(2-fluoro-benzyl)-2,6-dioxo-2,3,6,7-tetrahydro-1*H*-purin-8-ylmethyl]-phenyl}-amide;  
5-chlorothiophene-2-sulfonic acid {4-[3-butyl-1-(2-fluoro-benzyl)-2,6-dioxo-2,3,6,7-tetrahydro-1*H*-purin-8-ylmethyl]-phenyl}-amide;  
3-{4-[3-butyl-1-(2-fluoro-benzyl)-2,6-dioxo-2,3,6,7-tetrahydro-1*H*-purin-8-ylmethyl]-phenylsulfamoyl}-thiophene-2-carboxylic acid methyl ester;  
4,5-dibromothiophene-2-sulfonic acid {4-[3-butyl-1-(2-fluoro-benzyl)-2,6-dioxo-2,3,6,7-tetrahydro-1*H*-purin-8-ylmethyl]-phenyl}-amide; and  
5-bromo-thiophene-2-sulfonic acid {4-[3-butyl-1-(2-fluoro-benzyl)-2,6-dioxo-2,3,6,7-tetrahydro-1*H*-purin-8-ylmethyl]-phenyl}-amide.

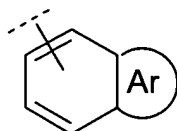
15. The compound of formula IA according to claim 12 wherein R<sup>5</sup> is a 5-membered heteroaromatic ring having two heteroatoms wherein a first heteroatom is N and a second heteroatom is independently selected from the group consisting of N, O and S, the 5-membered heteroaromatic ring being unsubstituted or substituted by at least one substituent selected from the group consisting of lower alkyl, halogen, carboxy lower alkyl, amino, alkyl amino and acetamido.

16. The compound of formula IA according to claim 15 wherein the compound is selected from the group consisting of  
1-Methyl-1*H*-imidazole-4-sulfonic acid {4-[3-butyl-1-(2-fluoro-benzyl)-2,6-dioxo-2,3,6,7-tetrahydro-1*H*-purin-8-ylmethyl]-phenyl}-amide trifluoroacetic acid salt; and  
5-chloro-1,3-dimethyl-1*H*-pyrazole-4-sulfonic acid {4-[3-butyl-1-(2-fluoro-benzyl)-2,6-dioxo-2,3,6,7-tetrahydro-1*H*-purin-8-ylmethyl]-phenyl}-amide.

17. The compound of formula IA according to claim 12 wherein R<sup>5</sup> is a 6-membered heteroaromatic ring having one N, the 6-membered heteroaromatic ring being unsubstituted or substituted by at least one substituent selected from the group consisting of lower alkyl, halogen, carboxy lower alkyl, amino, alkyl amino and acetamido.

18. The compound of formula IA according to claim 17 wherein the compound is 6-chloro-pyridine-3-sulfonic acid {4-[3-butyl-1-(2-fluoro-benzyl)-2,6-dioxo-2,3,6,7-tetrahydro-1*H*-purin-8-ylmethyl]-phenyl}-amide.

19. The compound of formula IA according to claim 12 wherein R<sup>5</sup> is



where Ar is selected from the group consisting of

a 5-membered heteroaromatic ring fused to the 6-membered ring, having one, two, or three heteroatoms, and wherein a first heteroatom is N, a second heteroatom is N and a third heteroatom is selected from the group consisting of O and S, and

a 6-membered aromatic ring fused to the 6-membered ring, having no or one N heteroatoms, the fused 6-membered aromatic ring being unsubstituted or substituted by at least one substituent selected from the group consisting of lower alkyl, halogen, carboxy lower alkyl, amino, alkyl amino and acetamido.

20. The compound of formula IA according to claim 19 wherein the compound is selected from the group consisting of  
*N*-{4-[3-butyl-1-(2-fluoro-benzyl)-2,6-dioxo-2,3,6,7-tetrahydro-1*H*-purin-8-ylmethyl]-phenyl}-1-naphthalenesulfonamide;  
 5-dimethylamino-naphthalene-1-sulfonic acid {4-[3-butyl-1-(2-fluoro-benzyl)-2,6-dioxo-2,3,6,7-tetrahydro-1*H*-purin-8-ylmethyl]-phenyl}-amide;  
 benzo[1,2,5]thiadiazole-4-sulfonic acid {4-[3-butyl-1-(2-fluoro-benzyl)-2,6-dioxo-2,3,6,7-tetrahydro-1*H*-purin-8-ylmethyl]-phenyl}-amide; and  
 benzo[1,2,5]oxadiazole-4-sulfonic acid {4-[3-butyl-1-(2-fluoro-benzyl)-2,6-dioxo-2,3,6,7-tetrahydro-1*H*-purin-8-ylmethyl]-phenyl}-amide.

21. The compound of formula IA according to claim 12 wherein R<sup>5</sup> is lower alkyl or lower alkyl substituted by phenyl.

22. The compound of formula IA according to claim 21 wherein the compound is selected from the group consisting of propane-2-sulfonic acid {4-[3-butyl-1-(2-fluoro-benzyl)-2,6-dioxo-2,3,6,7-tetrahydro-1*H*-purin-8-ylmethyl]-phenyl}-amide; *N*-{4-[3-butyl-1-(2-fluoro-benzyl)-2,6-dioxo-2,3,6,7-tetrahydro-1*H*-purin-8-ylmethyl]-phenyl}-*C*-phenyl-methanesulfonamide; and ethanesulfonic acid {4-[3-butyl-1-(2-fluoro-benzyl)-2,6-dioxo-2,3,6,7-tetrahydro-1*H*-purin-8-ylmethyl]-phenyl}-amide.

23. The compound of formula IA according to claim 12 wherein R<sup>5</sup> is lower alkenyl substituted by phenyl.

24. The compound of formula IA according to claim 23 wherein the compound is 2-phenyl-ethenesulfonic acid {4-[3-butyl-1-(2-fluoro-benzyl)-2,6-dioxo-2,3,6,7-tetrahydro-1*H*-purin-8-ylmethyl]-phenyl}-amide.

25. The compound of formula IA according to claim 12 wherein R<sup>5</sup> is phenyl.

26. The compound of formula IA according to claim 25 wherein the compound is *N*-{4-[3-butyl-1-(2-fluoro-benzyl)-2,6-dioxo-2,3,6,7-tetrahydro-1*H*-purin-8-ylmethyl]-phenyl}-benzenesulfonamide.

27. The compound of formula IA according to claim 12 wherein R<sup>5</sup> is phenyl substituted by at least one substituent selected from the group consisting of lower alkyl, lower alkyl substituted by halogen, halogen, lower alkoxy, lower alkoxy substituted by halogen, nitro and acetamido.

28. The compound of claim 27 wherein the phenyl group has one substituent selected from the group consisting of lower alkyl, lower alkyl substituted by halogen, halogen, lower alkoxy, lower alkoxy substituted by halogen, nitro and acetamido.

29. The compound of formula IA according to claim 28 wherein the one substituent is halogen.

30. The compound of formula IA according to claim 29 wherein the compound is selected from the group consisting of  
*N*-{4-[3-butyl-1-(2-fluoro-benzyl)-2,6-dioxo-2,3,6,7-tetrahydro-1*H*-purin-8-ylmethyl]-phenyl}-4-chloro-benzenesulfonamide;  
*N*-{4-[3-butyl-1-(2-fluoro-benzyl)-2,6-dioxo-2,3,6,7-tetrahydro-1*H*-purin-8-ylmethyl]-phenyl}-4-iodo-benzenesulfonamide;  
*N*-{4-[3-butyl-1-(2-fluoro-benzyl)-2,6-dioxo-2,3,6,7-tetrahydro-1*H*-purin-8-ylmethyl]-phenyl}-2-chloro-benzenesulfonamide;  
*N*-{4-[3-butyl-1-(2-fluoro-benzyl)-2,6-dioxo-2,3,6,7-tetrahydro-1*H*-purin-8-ylmethyl]-phenyl}-3-chloro-benzenesulfonamide;  
*N*-{4-[3-butyl-1-(2-fluoro-benzyl)-2,6-dioxo-2,3,6,7-tetrahydro-1*H*-purin-8-ylmethyl]-phenyl}-4-fluoro-benzenesulfonamide;  
*N*-{4-[3-butyl-1-(2-fluoro-benzyl)-2,6-dioxo-2,3,6,7-tetrahydro-1*H*-purin-8-ylmethyl]-phenyl}-2-fluoro-benzenesulfonamide; and  
*N*-{4-[3-butyl-1-(2-fluoro-benzyl)-2,6-dioxo-2,3,6,7-tetrahydro-1*H*-purin-8-ylmethyl]-phenyl}-4-bromo-benzenesulfonamide.

31. The compound of formula IA according to claim 28 wherein the one substituent is lower alkyl or lower alkyl substituted by halogen.

32. The compound of formula IA according to claim 31 wherein the compound is selected from the group consisting of  
*N*-{4-[3-butyl-1-(2-fluoro-benzyl)-2,6-dioxo-2,3,6,7-tetrahydro-1*H*-purin-8-ylmethyl]-phenyl}-3-trifluoromethyl-benzenesulfonamide;



*N*-{4-[3-butyl-1-(2-fluoro-benzyl)-2,6-dioxo-2,3,6,7-tetrahydro-1*H*-purin-8-ylmethyl]-phenyl}-4-isopropyl-benzenesulfonamide;  
*N*-{4-[3-butyl-1-(2-fluoro-benzyl)-2,6-dioxo-2,3,6,7-tetrahydro-1*H*-purin-8-ylmethyl]-phenyl}-3-methyl-benzenesulfonamide;  
*N*-{4-[3-butyl-1-(2-fluoro-benzyl)-2,6-dioxo-2,3,6,7-tetrahydro-1*H*-purin-8-ylmethyl]-phenyl}-2-trifluoromethyl-benzenesulfonamide;  
*N*-{4-[3-butyl-1-(2-fluoro-benzyl)-2,6-dioxo-2,3,6,7-tetrahydro-1*H*-purin-8-ylmethyl]-phenyl}-4-ethyl-benzenesulfonamide;  
*N*-{4-[3-butyl-1-(2-fluoro-benzyl)-2,6-dioxo-2,3,6,7-tetrahydro-1*H*-purin-8-ylmethyl]-phenyl}-2-methyl-benzenesulfonamide; and  
*N*-{4-[3-butyl-1-(2-fluoro-benzyl)-2,6-dioxo-2,3,6,7-tetrahydro-1*H*-purin-8-ylmethyl]-phenyl}-4-trifluoromethyl-benzenesulfonamide.

33. The compound of formula IA according to claim 28 wherein the one substituent is selected from the group consisting of nitro, alkoxy and alkoxy substituted by halogen.

34. The compound of claim IA according to claim 33 wherein the compound is selected from the group consisting of

*N*-{4-[3-butyl-1-(2-fluoro-benzyl)-2,6-dioxo-2,3,6,7-tetrahydro-1*H*-purin-8-ylmethyl]-phenyl}-4-trifluoromethyl-benzenesulfonamide,  
*N*-{4-[3-butyl-1-(2-fluoro-benzyl)-2,6-dioxo-2,3,6,7-tetrahydro-1*H*-purin-8-ylmethyl]-phenyl}-3-nitro-benzenesulfonamide,  
*N*-{4-[3-butyl-1-(2-fluoro-benzyl)-2,6-dioxo-2,3,6,7-tetrahydro-1*H*-purin-8-ylmethyl]-phenyl}-4-methoxy-benzenesulfonamide, and  
*N*-{4-[3-butyl-1-(2-fluoro-benzyl)-2,6-dioxo-2,3,6,7-tetrahydro-1*H*-purin-8-ylmethyl]-phenyl}-4-trifluoromethoxy-benzenesulfonamide.

35. The compound of formula IA according to claim 27 wherein the phenyl group has two substituents selected from the group consisting of lower alkyl, lower alkyl

substituted by halogen, halogen, lower alkoxy, lower alkoxy substituted by halogen, nitro and acetamido.

36. The compound of formula IA according to claim 35 wherein the two substituents are each halogen.

37. The compound of formula IA according to claim 36 wherein the halogen substituents are chloro.

38. The compound of formula IA according to claim 37 wherein the compound is selected from the group consisting of  
*N*-{4-[3-butyl-1-(2-fluoro-benzyl)-2,6-dioxo-2,3,6,7-tetrahydro-1*H*-purin-8-ylmethyl]-phenyl}-2,4-dichloro-benzenesulfonamide;  
*N*-{4-[3-butyl-1-(2-fluoro-benzyl)-2,6-dioxo-2,3,6,7-tetrahydro-1*H*-purin-8-ylmethyl]-phenyl}-2,5-dichloro-benzenesulfonamide;  
*N*-{4-[3-butyl-1-(2-fluoro-benzyl)-2,6-dioxo-2,3,6,7-tetrahydro-1*H*-purin-8-ylmethyl]-phenyl}-2,6-dichloro-benzenesulfonamide;  
*N*-{4-[3-butyl-1-(2-fluoro-benzyl)-2,6-dioxo-2,3,6,7-tetrahydro-1*H*-purin-8-ylmethyl]-phenyl}-2,3-dichloro-benzenesulfonamide;  
*N*-{4-[3-butyl-1-(2-fluoro-benzyl)-2,6-dioxo-2,3,6,7-tetrahydro-1*H*-purin-8-ylmethyl]-phenyl}-3,5-dichloro-benzenesulfonamide; and  
*N*-{4-[3-butyl-1-(2-fluoro-benzyl)-2,6-dioxo-2,3,6,7-tetrahydro-1*H*-purin-8-ylmethyl]-phenyl}-3,4-dichloro-benzenesulfonamide.

39. The compound of formula IA according to claim 36 wherein one of the halogen substituents is chloro and the other of the halogen substituents is fluoro.

40. The compound of formula IA according to claim 39 wherein the compound is selected from the group consisting of  
*N*-{4-[3-Butyl-1-(2-fluoro-benzyl)-2,6-dioxo-2,3,6,7-tetrahydro-1*H*-purin-8-ylmethyl]-phenyl}-2-chloro-4-fluoro-benzenesulfonamide; and

*N*-{4-[3-butyl-1-(2-fluoro-benzyl)-2,6-dioxo-2,3,6,7-tetrahydro-1*H*-purin-8-ylmethyl]-phenyl}-3-chloro-4-fluoro-benzenesulfonamide.

41. The compound of formula IA according to claim 36 wherein the two halogen substituents are fluoro.

42. The compound of formula IA according to claim 41 selected from the group consisting of  
*N*-{4-[3-butyl-1-(2-fluoro-benzyl)-2,6-dioxo-2,3,6,7-tetrahydro-1*H*-purin-8-ylmethyl]-phenyl}-2,4-difluoro-benzenesulfonamide;  
*N*-{4-[3-butyl-1-(2-fluoro-benzyl)-2,6-dioxo-2,3,6,7-tetrahydro-1*H*-purin-8-ylmethyl]-phenyl}-2,6-difluoro-benzenesulfonamide; and  
*N*-{4-[3-butyl-1-(2-fluoro-benzyl)-2,6-dioxo-2,3,6,7-tetrahydro-1*H*-purin-8-ylmethyl]-phenyl}-3,4-difluoro-benzenesulfonamide.

43. The compound of formula IA according to claim 35 wherein one of the substituents is halogen and the other of the substituents is lower alkyl.

44. The compound of formula IA according to claim 43 selected from the group consisting of  
*N*-{4-[3-butyl-1-(2-fluoro-benzyl)-2,6-dioxo-2,3,6,7-tetrahydro-1*H*-purin-8-ylmethyl]-phenyl}-3-chloro-4-methyl-benzenesulfonamide;  
*N*-{4-[3-butyl-1-(2-fluoro-benzyl)-2,6-dioxo-2,3,6,7-tetrahydro-1*H*-purin-8-ylmethyl]-phenyl}-3-chloro-2-methyl-benzenesulfonamide;  
*N*-{4-[3-butyl-1-(2-fluoro-benzyl)-2,6-dioxo-2,3,6,7-tetrahydro-1*H*-purin-8-ylmethyl]-phenyl}-2-chloro-6-methyl-benzenesulfonamide; and  
*N*-{4-[3-butyl-1-(2-fluoro-benzyl)-2,6-dioxo-2,3,6,7-tetrahydro-1*H*-purin-8-ylmethyl]-phenyl}-5-fluoro-2-methyl-benzenesulfonamide.

45. The compound of formula IA according to claim 35 wherein the two substituents are selected from the group consisting of lower alkyl, lower alkoxyl and nitro.

46. The compound of formula IA according to claim 45 selected from the group consisting of  
*N*-{4-[3-butyl-1-(2-fluoro-benzyl)-2,6-dioxo-2,3,6,7-tetrahydro-1*H*-purin-8-ylmethyl]-phenyl}-2,5-dimethoxy-benzenesulfonamide;  
*N*-{4-[3-butyl-1-(2-fluoro-benzyl)-2,6-dioxo-2,3,6,7-tetrahydro-1*H*-purin-8-ylmethyl]-phenyl}-2-methoxy-5-methyl-benzenesulfonamide;  
*N*-{4-[3-butyl-1-(2-fluoro-benzyl)-2,6-dioxo-2,3,6,7-tetrahydro-1*H*-purin-8-ylmethyl]-phenyl}-3,4-dimethoxy-benzenesulfonamide;  
*N*-{4-[3-butyl-1-(2-fluoro-benzyl)-2,6-dioxo-2,3,6,7-tetrahydro-1*H*-purin-8-ylmethyl]-phenyl}-2,5-dimethyl-benzenesulfonamide; and  
*N*-{4-[3-Butyl-1-(2-fluoro-benzyl)-2,6-dioxo-2,3,6,7-tetrahydro-1*H*-purin-8-ylmethyl]-phenyl}-2-methyl-5-nitro-benzenesulfonamide.

47. The compound of formula IA according to claim 27 wherein the phenyl group has three substituents selected from the group consisting of lower alkyl, lower alkyl substituted by halogen, halogen, lower alkoxy, lower alkoxy substituted by halogen, nitro and acetamido.

48. The compound of formula IA according to claim 47 wherein the three substituents are selected from lower alkyl and halogen.

49. The compound of formula IA according to claim 48 wherein the compound is selected from the group consisting of  
*N*-{4-[3-butyl-1-(2-fluoro-benzyl)-2,6-dioxo-2,3,6,7-tetrahydro-1*H*-purin-8-ylmethyl]-phenyl}-2,4,6-trimethyl-benzenesulfonamide;  
*N*-{4-[3-butyl-1-(2-fluoro-benzyl)-2,6-dioxo-2,3,6,7-tetrahydro-1*H*-purin-8-ylmethyl]-phenyl}-4-chloro-2,5-dimethyl-benzenesulfonamide,

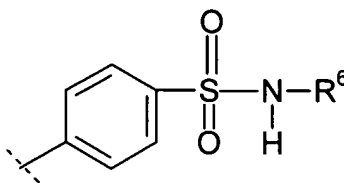
*N*-{4-[3-butyl-1-(2-fluoro-benzyl)-2,6-dioxo-2,3,6,7-tetrahydro-1*H*-purin-8-ylmethyl]-phenyl}-2,4-dichloro-6-methyl-benzenesulfonamide; and  
*N*-{4-[3-butyl-1-(2-fluoro-benzyl)-2,6-dioxo-2,3,6,7-tetrahydro-1*H*-purin-8-ylmethyl]-phenyl}-*C*-phenyl-methanesulfonamide.

50. The compound of formula IA according to claim 27 wherein the phenyl group has four substituents selected from the group consisting of lower alkyl, lower alkyl substituted by halogen, halogen, lower alkoxy, lower alkoxy substituted by halogen, nitro and acetamido.

51. The compound of formula IA according to claim 50 wherein the four substituents are selected from the group consisting of lower alkyl and lower alkoxy.

52. The compound of formula IA according to claim 51 selected from the group consisting of  
*N*-{4-[3-butyl-1-(2-fluoro-benzyl)-2,6-dioxo-2,3,6,7-tetrahydro-1*H*-purin-8-ylmethyl]-phenyl}-2,3,5,6-tetramethyl-benzenesulfonamide; and  
*N*-{4-[3-butyl-1-(2-fluoro-benzyl)-2,6-dioxo-2,3,6,7-tetrahydro-1*H*-purin-8-ylmethyl]-phenyl}-4-methoxy-2,3,6-trimethyl-benzenesulfonamide.

53. The compound of formula IA according to claim 10 wherein  $R^3$  is



54. The compound of formula IA according to claim 53 wherein  $R^6$  is a 5-membered aromatic heterocyclic ring with one or two heteroatoms wherein a first heteroatom is N and a second heteroatom is selected from the group consisting of N and S, the 5-membered heterocyclic ring being unsubstituted or substituted by at least one

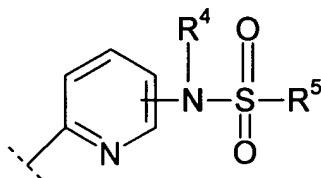
substituent selected from the group consisting of lower alkyl, halogen, carboxy lower alkyl, amino, alkyl amino and acetamido.

55. The compound of formula IA according to claim 54 wherein the compound is selected from the group consisting of  
4-[3-butyl-1-(2-fluoro-benzyl)-2,6-dioxo-2,3,6,7-tetrahydro-1*H*-purin-8-ylmethyl]-*N*-(1,3,5-trimethyl-1*H*-pyrazol-4-yl)-benzenesulfonamide; and  
4-[3-butyl-1-(2-fluoro-benzyl)-2,6-dioxo-2,3,6,7-tetrahydro-1*H*-purin-8-ylmethyl]-*N*-thiazol-2-yl-benzenesulfonamide.

56. The compound of formula IA according to claim 53 wherein R<sup>6</sup> is a 6-membered aromatic heterocyclic ring with one or two N heteroatoms, the 6-membered heterocyclic ring being unsubstituted or substituted by at least one substituent selected from the group consisting of lower alkyl, halogen, carboxy lower alkyl, amino, alkyl amino and acetamido.

57. The compound of formula IA according to claim 56 wherein the compound is selected from the group consisting of  
4-[3-butyl-1-(2-fluoro-benzyl)-2,6-dioxo-2,3,6,7-tetrahydro-1*H*-purin-8-ylmethyl]-*N*-pyridin-2-yl-benzenesulfonamide;  
4-[3-butyl-1-(2-fluoro-benzyl)-2,6-dioxo-2,3,6,7-tetrahydro-1*H*-purin-8-ylmethyl]-*N*-pyridin-3-yl-benzenesulfonamide;  
4-[3-butyl-1-(2-fluoro-benzyl)-2,6-dioxo-2,3,6,7-tetrahydro-1*H*-purin-8-ylmethyl]-*N*-pyridin-4-yl-benzenesulfonamide;  
4-[3-butyl-1-(2-fluoro-benzyl)-2,6-dioxo-2,3,6,7-tetrahydro-1*H*-purin-8-ylmethyl]-*N*-pyrimidin-2-yl-benzenesulfonamide; and  
4-[3-butyl-1-(2-fluoro-benzyl)-2,6-dioxo-2,3,6,7-tetrahydro-1*H*-purin-8-ylmethyl]-*N*-(1,3,5-trimethyl-1*H*-pyrazol-4-yl)-benzenesulfonamide.

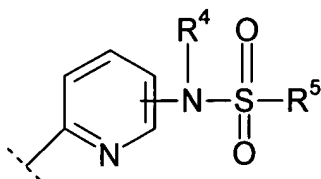
58. The compound of formula IA according to claim 10 wherein R<sup>3</sup> is



R<sup>4</sup> is H, and R<sup>5</sup> is a 5-membered aromatic heterocyclic ring with one or two heteroatoms wherein a first heteroatom is N and a second heteroatom is selected from the group consisting of N and S, the 5-membered heterocyclic ring being unsubstituted or substituted by at least one substituent selected from the group consisting of lower alkyl, halogen, carboxy lower alkyl, amino, alkyl amino and acetamido.

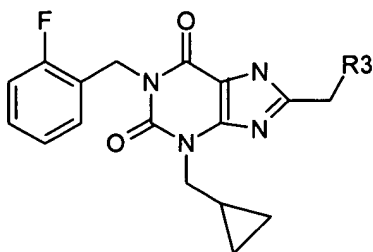
59. The compound of formula IA according to claim 58 wherein the compound is 5-chloro-1,3-dimethyl-1*H*-pyrazole-4-sulfonic acid {6-[3-cyclobutylmethyl-1-(2-fluoro-benzyl)-2,6-dioxo-2,3,6,7-tetrahydro-1*H*-purin-8-ylmethyl]-pyridin-3-yl}-amide.

60. The compound of formula IA according to claim 8 wherein R<sup>2</sup> is lower alkyl substituted by cyclobutyl and R<sup>3</sup> is



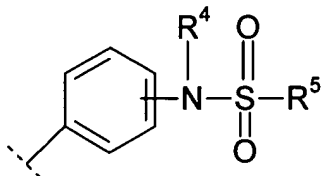
61. The compound of formula IA according to claim 60 wherein the compound is 5-chloro-1,3-dimethyl-1*H*-pyrazole-4-sulfonic acid {6-[3-cyclobutylmethyl-1-(2-fluoro-benzyl)-2,6-dioxo-2,3,6,7-tetrahydro-1*H*-purin-8-ylmethyl]-pyridin-3-yl}-amide.

62. The compound of formula 1 according to claim 8 with the formula



IB.

63. The compound of formula IB according to claim 62 wherein R<sup>3</sup> is



64. The compound of formula IB according to claim 63 wherein R<sup>4</sup> is H.

65. The compound of formula IB according to claim 64 wherein R<sup>5</sup> is a 5-membered heteroaromatic ring having two heteroatoms wherein a first heteroatom is N and a second heteroatom is independently selected from the group consisting of N, O and S, the 5-membered heteroaromatic ring being unsubstituted or substituted by at least one substituent selected from the group consisting of lower alkyl, halogen, carboxy lower alkyl, amino, alkyl amino and acetamido.

66. The compound of formula IB according to claim 65 wherein the 5-membered heteroaromatic ring has two lower alkyl substituents.

67. The compound of formula IB according to claim 66 wherein the compound is selected from the group consisting of  
 1,2-dimethyl-1*H*-imidazole-4-sulfonic acid {4-[3-cyclopropylmethyl-1-(2-fluoro-benzyl)-2,6-dioxo-2,3,6,7-tetrahydro-1*H*-purin-8-ylmethyl]-phenyl}-amide;  
 3,5-dimethyl-isoxazole-4-sulfonic acid {4-[3-cyclopropylmethyl-1-(2-fluoro-benzyl)-2,6-dioxo-2,3,6,7-tetrahydro-1*H*-purin-8-ylmethyl]-phenyl}-amide; and



1,3-dimethyl-1*H*-pyrazole-4-sulfonic acid {4-[3-cyclopropylmethyl-1-(2-fluoro-benzyl)-2,6-dioxo-2,3,6,7-tetrahydro-1*H*-purin-8-ylmethyl]-phenyl}-amide.

68. The compound of formula I according to claim 1 wherein the compound is 1,2-dimethyl-1*H*-imidazole-4-sulfonic acid {4-[3-cyclopropylmethyl-1-(2-fluoro-benzyl)-2,6-dioxo-2,3,6,7-tetrahydro-1*H*-purin-8-ylmethyl]-phenyl}-amide.

69. The compound of formula I according to claim 1 wherein the compound is 3,5-dimethyl-isoxazole-4-sulfonic acid {4-[3-cyclopropylmethyl-1-(2-fluoro-benzyl)-2,6-dioxo-2,3,6,7-tetrahydro-1*H*-purin-8-ylmethyl]-phenyl}-amide.

70. The compound of formula I according to claim 1 wherein the compound is 1,3-dimethyl-1*H*-pyrazole-4-sulfonic acid {4-[3-cyclopropylmethyl-1-(2-fluoro-benzyl)-2,6-dioxo-2,3,6,7-tetrahydro-1*H*-purin-8-ylmethyl]-phenyl}-amide.

71. The compound of formula IB according to claim 65 wherein the 5-membered heteroaromatic ring has one lower alkyl substituent.

72. The compound of formula IB according to claim 71 wherein the compound is selected from the group consisting of 1-methyl-1*H*-pyrazole-4-sulfonic acid {4-[3-cyclopropylmethyl-1-(2-fluoro-benzyl)-2,6-dioxo-2,3,6,7-tetrahydro-1*H*-purin-8-ylmethyl]-phenyl}-amide, and 1-methyl-1*H*-imidazole-4-sulfonic acid {4-[3-cyclopropylmethyl-1-(2-fluoro-benzyl)-2,6-dioxo-2,3,6,7-tetrahydro-1*H*-purin-8-ylmethyl]-phenyl}-amide.

73. The compound of formula IB according to claim 65 wherein the 5-membered heteroaromatic ring has one lower alkyl substituent and one amino substituent.

74. The compound of formula IB according to claim 73 wherein the compound is 2-amino-4-methyl-thiazole-5-sulfonic acid {4-[3-cyclopropylmethyl-1-(2-

fluoro-benzyl)-2,6-dioxo-2,3,6,7-tetrahydro-1*H*-purin-8-ylmethyl]-phenyl}-amide trifluoro-acetic acid salt.

75. The compound of formula IB according to claim 65 wherein the 5-membered heteroaromatic ring has one lower alkyl substituent and one acetamido substituent.

76. The compound of formula IB according to claim 75 wherein the compound is *N*-(5-{4-[3-cyclopropylmethyl-1-(2-fluoro-benzyl)-2,6-dioxo-2,3,6,7-tetrahydro-1*H*-purin-8-ylmethyl]-phenylsulfamoyl}-4-methyl-thiazol-2-yl)-acetamide.

77. The compound of formula IB according to claim 65 wherein the 5-membered heteroaromatic ring has one lower alkyl substituent and one halogen substituent.

78. The compound of formula IB according to claim 77 wherein the compound is 5-chloro-1,3-dimethyl-1*H*-pyrazole-4-sulfonic acid {4-[3-cyclopropylmethyl-1-(2-fluoro-benzyl)-2,6-dioxo-2,3,6,7-tetrahydro-1*H*-purin-8-ylmethyl]-phenyl}-amide.

79. The compound of formula IB according to claim 65 wherein the 5-membered heteroaromatic ring has three substituents.

80. The compound of formula IB according to claim 79 wherein the compound is 5-chloro-1,3-dimethyl-1*H*-pyrazole-4-sulfonic acid {3-[3-cyclopropylmethyl-1-(2-fluoro-benzyl)-2,6-dioxo-2,3,6,7-tetrahydro-1*H*-purin-8-ylmethyl]-phenyl}-amide.

81. The compound of formula IB according to claim 64 wherein R<sup>5</sup> is phenyl substituted by at least one substituent selected from the group consisting of lower alkyl, lower alkyl substituted by halogen, halogen, lower alkoxy, lower alkoxy substituted by halogen, nitro and acetamido.

82. The compound of formula IB according to claim 81 wherein the phenyl group is substituted by one halogen.

83. The compound of formula IB according to claim 82 wherein the compound is *N*-{4-[3-cyclopropylmethyl-1-(2-fluoro-benzyl)-2,6-dioxo-2,3,6,7-tetrahydro-1*H*-purin-8-ylmethyl]-phenyl}-3-fluoro-benzenesulfonamide.

84. The compound of formula IB according to claim 81 wherein the phenyl is substituted by one alkoxy.

85. The compound of formula IB according to claim 84 wherein the compound is *N*-{4-[3-cyclopropylmethyl-1-(2-fluoro-benzyl)-2,6-dioxo-2,3,6,7-tetrahydro-1*H*-purin-8-ylmethyl]-phenyl}-3-methoxy-benzenesulfonamide.

86. The compound of formula IB according to claim 81 wherein the phenyl is substituted by one acetamido.

87. The compound of formula IB according to claim 86 wherein the compound is *N*-(4-{4-[3-cyclopropylmethyl-1-(2-fluoro-benzyl)-2,6-dioxo-2,3,6,7-tetrahydro-1*H*-purin-8-ylmethyl]-phenylsulfamoyl}-phenyl)-acetamide.

88. The compound of formula IB according to claim 64 wherein R<sup>5</sup> is a 6-membered heteroaromatic ring having one N, the 6-membered heteroaromatic ring being unsubstituted or substituted by at least one substituent selected from the group consisting of lower alkyl, halogen, carboxy lower alkyl, amino, alkyl amino and acetamido.

89. The compound of formula IB according to claim 88 wherein the heteroaromatic ring is unsubstituted.

90. The compound of formula IB according to claim 89 wherein the compound is pyridine-3-sulfonic acid {4-[3-cyclopropylmethyl-1-(2-fluoro-benzyl)-2,6-dioxo-2,3,6,7-tetrahydro-1*H*-purin-8-ylmethyl]-phenyl}-amide trifluoro-acetic acid salt.

91. The compound of formula IB according to claim 88 wherein the 6-membered heteroaromatic ring has one substituent.

92. The compound of formula IB according to claim 88 wherein 6-membered heteroaromatic ring is substituted by two halogen substituents.

93. The compound of formula IB according to claim 92 wherein the compound is 5-bromo-6-chloro-pyridine-3-sulfonic acid {4-[3-cyclopropylmethyl-1-(2-fluoro-benzyl)-2,6-dioxo-2,3,6,7-tetrahydro-1*H*-purin-8-ylmethyl]-phenyl}-amide.

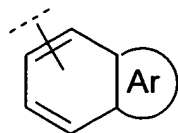
94. The compound of formula IB according to claim 64 wherein R<sup>5</sup> is lower alkyl.

95. The compound of formula IB according to claim 94 wherein the compound is *N*-{4-[3-cyclopropylmethyl-1-(2-fluoro-benzyl)-2,6-dioxo-2,3,6,7-tetrahydro-1*H*-purin-8-ylmethyl]-phenyl}-methanesulfonamide.

96. The compound of formula IB according to claim 64 wherein R<sup>5</sup> is amino lower alkyl.

97. The compound of formula IB according to claim 96 wherein the compound is *N*-{4-[3-cyclopropylmethyl-1-(2-fluoro-benzyl)-2,6-dioxo-2,3,6,7-tetrahydro-1*H*-purin-8-ylmethyl]-phenyl}-*N,N*-dimethylsulfamide.

98. The compound of formula IB according to claim 64 wherein R<sup>5</sup> is



wherein Ar is selected from the group consisting of a 5-membered heteroaromatic ring fused to the 6-membered ring, having one, two, or three heteroatoms, and wherein a first heteroatom is N, a second heteroatom is N and a third heteroatom is selected from the group consisting of O and S, the 5-membered heteroaromatic ring being unsubstituted or substituted by at least one substituent selected from the group consisting of lower alkyl, halogen, carboxy lower alkyl, amino, alkyl amino and acetamido.

99. The compound of formula IB according to claim 98 wherein the compound is quinoline-8-sulfonic acid {4-[3-cyclopropylmethyl-1-(2-fluoro-benzyl)-2,6-dioxo-2,3,6,7-tetrahydro-1*H*-purin-8-ylmethyl]-phenyl}-amide.

100. The compound of formula IB according to claim 63 wherein R<sup>4</sup> is lower alkyl.

101. The compound of formula IB according to claim 100 wherein the compound is selected from the group consisting of 1,3-dimethyl-1*H*-pyrazole-4-sulfonic acid {4-[3-cyclopropylmethyl-1-(2-fluoro-benzyl)-2,6-dioxo-2,3,6,7-tetrahydro-1*H*-purin-8-ylmethyl]-phenyl}-methyl-amide; and 5-chloro-1,3-dimethyl-1*H*-pyrazole-4-sulfonic acid {4-[3-cyclopropylmethyl-1-(2-fluoro-benzyl)-2,6-dioxo-2,3,6,7-tetrahydro-1*H*-purin-8-ylmethyl]-phenyl}-methyl-amide.

102. A pharmaceutical composition comprising a compound of formula I according to claim 1 or a pharmaceutically acceptable salt or prodrug thereof, and a pharmaceutically acceptable excipient.

103. A method of treatment for type 2 diabetes comprising administering a therapeutically effective amount of a compound of formula I according to claim 1 or a pharmaceutically acceptable salt or prodrug thereof, to a patient in need of such treatment.